

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/049,170

05/22/2002

Akira Hashimoto

MAT-8211US

7946

7590

09/02/2003

Lawrence E Ashery  
Ratner & Prestia  
One Westlakes Berwyn Suite 301  
P O Box 980  
Valley Forge, PA 19482-0980

EXAMINER

MAYES, MELVIN C

ART UNIT

PAPER NUMBER

1734

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/049,170

Applicant(s)

HASHIMOTO, AKIRA

Examiner

Melvin Curtis Mayes

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-19 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-10 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 11-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

(1)

Claims 1 and 5 are objected to because of the following informalities: in Claim 1 “stack” should be “stacking”; In Claim 5, “minder” should be “binder.” Appropriate correction is required.

### ***Claim Interpretation***

(2)

Claims 1 and Claim 15 claims “heat-resistant substrate.” According to the specification such a substrate is one capable of resisting against a temperature of 150°C or higher (pg. 5). For purposes of examination, the claims are interpreted as a “heat-resistant substrate” being any substrate that can resist temperature of 150°C or higher, including a sintered ceramic substrate.

Claims 1, 7 and 15 claim forming “a first assembly” by stacking a green sheet to cover the conductive pattern on the heat-resistant substrate or the sintered ceramic substrate. The claims do not claim that the first assembly is formed only of the green sheet and conductive pattern, i.e., the heat-resistant substrate or ceramic substrate is separated from the first assembly, nor does the specification define “first assembly.” For purposes of examination, the claims are interpreted as inclusive of the heat-resistant substrate or ceramic substrate being a part of the “first assembly” which is formed and which is stacked with other first assemblies as claimed in Claim 4 and 11 or to cover a second conductive pattern as claimed in Claim 15. If the heat-resistant substrate or ceramic substrate is not part of the first assembly, this should be made claimed.

***Claim Rejections - 35 USC § 103***

(3)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(4)

Claims 1-3 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikeska et al. 5,254,191 in view of

Mikeska et al. disclose a method of making a ceramic body comprising: providing a pre-fired ceramic substrate of high thermal conductivity material such as AlN (heat-resistant substrate or sintered ceramic substrate) having metallization; laminating to the ceramic substrate an unfired ceramic tape (green sheet) having metallization and filled vias and to the ceramic tape a constraining layer; and firing the assemblage (col. 13, line 15 – col. 14, line 60). Mikeska et al. do not disclose providing the prefired ceramic substrate with metallization by intaglio printing with an adhesive layer on the ceramic substrate.

JP 11-121645 teaches that a sintered ceramic substrate can be provided with a conductor pattern by filling an intaglio with conductor paste, pasting the intaglio and ceramic substrate together using an glue line (adhesive layer) on the ceramic substrate and under heat and pressure, removing the intaglio and sintering before providing the ceramic substrate with an insulating layer. The method can provide high wiring density at low wiring resistance (Abstract and computer translation).

It would have been obvious to one of ordinary skill in the art to have modified the method of Mikeska et al. for making a ceramic body by providing the metallization (conductive pattern) on the prefired ceramic substrate by intaglio, as taught by JP '645, to provide high wiring density at low wiring resistance. Providing the metallization on the prefired ceramic substrate by filling an intaglio with conductor paste, pasting the intaglio and ceramic substrate together using an glue line (adhesive layer) on the ceramic substrate under heat and pressure and removing the intaglio before laminating the unfired ceramic tape to the ceramic substrate would have been obvious to one of ordinary skill in the art as a method of providing a sintered ceramic substrate with metallization, as taught by JP '645.

***Allowable Subject Matter***

(5)

According to the specification, the heat-resistant substrate is separated from a first assembly of green sheet, conductive pattern and adhesive layer (Figure 1). Claim 1 would be allowable if amended to include a step of separating the heat-resistant substrate from the first assembly comprising the green sheet, conductive pattern and adhesive layer.

(6)

Claims 4-6 and 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(7)

Claims 15-19 are allowed.

***Conclusion***

(8)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


The references disclose laminating a green sheet to a sintered ceramic substrate or providing conductor pattern by intaglio.

(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM